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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,194	07/03/2003	Chandra Mouli	M4065.0933/P933	4126
24998	7590	04/06/2005		EXAMINER
				TRAN, TAN N
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/612,194	MOULI, CHANDRA <i>(pm)</i>
Examiner	Art Unit	
TAN N TRAN	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on amendment filed on 02/09/05.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-39 and 60-63 is/are pending in the application.  
 4a) Of the above claim(s) 15-19 is/are withdrawn from consideration.  
 5) Claim(s) 20-24 is/are allowed.  
 6) Claim(s) 1-4,7,11-14,25-28,31,35-39 and 60-63 is/are rejected.  
 7) Claim(s) 5,6,8-10,29,30 and 32-34 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Minhloan Tran*  
**Minhloan Tran**  
**Primary Examiner**  
**Art Unit 2826**

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

1. Applicant's communication filed on 02/09/05 has been carefully considered by the examiner. The arguments advanced therein are persuasive with respect to the rejections of record and those rejections are accordingly withdrawn. In view of a further search, however, a new rejection is set forth further below. This action is not made final.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4,7,11-14,25-28,31,35-39,60-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (5,912,836) in view of Applicant's Prior Art (APA).

With regard to claims 1-3,13,25-27,37-38,60, Liu et al. discloses at least one transistor structure (100,101, or 102) comprising: at least one gate 100A; and first and second source and drain lines (100C,100B) serve as the first and second leads respectively couple to the source and drain regions formed in the transistor structure (100,101, or 102), wherein the at least one transistor structure (100,101, or 102) has at least two threshold voltages ( $V_L, V_{Target}$ ) associated

with at least one channel, and wherein an I-V characteristic of the transistor structure (100,101, or 102) is determined at least in part by the threshold voltages. (Note figs. 2,3 of Liu et al.).

Liu et al. does not disclose the cell comprising a photo-conversion device, and a source follower transistor having the channel region formed between the source and drain regions.

However, APA discloses the cell comprising a photo-conversion device, and a source follower transistor 27 having the channel region formed between the source and drain regions 32. (Note fig. 1 of APA).

Therefore, it would have been obvious to one of ordinary skill in the art to form the Liu et al.'s device having the cell comprising a photo-conversion device, and a source follower transistor having the channel region formed between the source and drain regions such as taught by APA because such structure is conventional in the art for forming transistor of the image sensor.

With regard to claim 39, Liu et al. and APA disclose all the claimed subject matter as in claim 1 except for an image sensor coupled to the processor. However, it would have been obvious to one of ordinary skill in the art to form an image sensor coupled to the processor in order to perform the function of image sensor.

With regard to claims 4,28,61, it is inherent that Liu et al. discloses the at least one transistor structure (100,101, or 102) comprises first, second, and third channel regions connected in parallel because fig. 3 of Liu et al. is formed as an array of cells.

With regard to claims 7,31 Liu et al. and APA disclose all the claimed subject matter except for the at least one transistor structure comprises one channel region and wherein the channel region comprises a normal conduction path and at least one parasitic conduction path.

However, it would have been obvious to one of ordinary skill in the art to form the at least one transistor structure comprises one channel region and wherein the channel region comprises a normal conduction path and at least one parasitic conduction path in order to stabilize a capacitance component.

With regard to claims 11,35, it is inherent that Liu et al. discloses the at least one transistor structure having two or more gate oxide thickness because the transistor structure of Liu et al. having two or more transistors in order to form an array of cells. Liu et al. and APA disclose all the claimed subject matter except for the two or more threshold voltages result at least in part from the at least one transistor having two or more gate oxide thickness. However, in reference to the claim language referring to the function of the transistor structure having two or more gate oxide thickness, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963).

With regard to claims 12,36, Liu et al. discloses a sub-threshold region and a linear region provide a same for a signal. (Note figs. 2,3 of Liu et al.).

With regard to claim 14, Liu et al. and APA disclose all the claimed subject matter except for the photo-conversion device is a pinned photodiode. However, it would have been obvious to one of ordinary skill in the art to form the photo-conversion device is a pinned photodiode in order to transfer the photoelectric charges from the pinned photodiode to the floating region.

With regard to claims 62,63, Liu et al. and APA disclose all the claimed subject matter except for the first channel region corresponds to a first threshold voltage and the second and third channel regions correspond to second and third threshold voltages, respectively, or the second and third channel regions correspond to second threshold voltages and wherein the first, second and third threshold voltages are different from one another. However, it would have been obvious to one of ordinary skill in the art to form the first channel region corresponds to a first threshold voltage and the second and third channel regions correspond to second and third threshold voltages, respectively, or the second and third channel regions correspond to second threshold voltages and wherein the first, second and third threshold voltages are different from one another because such structure is conventional in the art for forming an array of cells having the threshold voltage capable of maintaining a potential distribution.

***Allowable Subject Matter***

3. Claims 5,6,8-10,29,30,32-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 5,6,8-10,29,30,32-34 are allowable over the prior art of record, because none of these references disclose or can be combined to yield the claimed invention such as the first

channel region corresponds to a first threshold voltage and the second and third channel regions correspond to second and third threshold voltages respectively, and wherein the first threshold voltage is higher than the second and third threshold voltages as recited in claims 5,29, the first channel region corresponds to a highest first threshold voltage and the second and third channel regions correspond to second threshold voltage and wherein the first threshold voltage is higher than the second threshold voltage as recited in claim 6,30, the normal conduction path is associated with a highest first threshold voltage and the at least one parasitic conduction path is associated with at least a second lower threshold voltage as recited in claims 8,32.

4. Claims 20-24 are allowable over the prior art of record, because none of these references disclose or can be combined to yield the claimed invention such as the normal conduction path is associated with a highest first threshold voltage as recited in claim20.

### **Conclusion**

5. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tan Tran whose telephone number is (571) 272-1923. The examiner can normally be reached on M-F 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for after final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

TT

Mar 2005